

# **EVALUATION OF ESTABLISHMENT METHODS FOR NATIVE WARMSEASON GRASSES ON CANAL BANKS IN THE GRAND PRAIRIE**

## **WHAT**

The primary reason for conducting this study is to determine the best method for planting and establishing native warm-season grasses on canal banks. Information from this study will help to increase the number of acres of these native grasses. These canal banks will result from the construction of an irrigation canal, which will divert water from the White River. The water will be delivered to farmers in the Grand Prairie Area through 184 miles of underground pipe, 178 miles of new canals, and 291 miles of existing channels and streams. This water will be used to irrigate crops in an area about 600 square miles in portions of Arkansas, Prairie, Lonoke, and Monroe counties. This project will deliver water to an area of about 362,662 acres, which includes about 254,400 acres of cropland.

## **WHY**

### **Declining Aquifers**

An aquifer is an underground pocket of gravel, sand and silt that holds water. It is like an underground lake and it can take millions of years to form. Farmers and cities pump water from the aquifer to irrigate crops and provide drinking water. An aquifer is recharged from above by rainfall, from below by water entering the aquifer, or from river water. Since the early 1900s the water table has dropped about 60 feet. Over the last six years some areas have seen a drop of more than 15 feet. It is hoped that this system of canals will help to slow this decline in the aquifer levels.

### **Declining Native Grasses**

Prior to the introduction of cultivated fields (rice, cotton, and soybeans) there was a vast native tallgrass prairie of about 700 square miles in the Grand Prairie Area. Today only 220 acres are managed and cared for by the Arkansas Natural Heritage Commission. If this area of tallgrass prairie was an animal or bird, it would be added to the endangered species list. By using the canal banks to plant some of these native grasses, we hope to increase the area of these grasses, provide a habitat for wildlife, and beautify the area for future generations.

## **HOW**

A canal was constructed near the Hazen airport. On the east side, the top soil was put back on top of the canal. On the west side, near the road, the soil was removed from the bottom of the pit and piled on top of the canal. This bottom soil will probably be the poorer of the two soils because of its lack of nutrients and ability to hold moisture. Four of the major native warm-season grasses (indiangrass, switchgrass, big and little bluestem) will be planted on both sides of the canal. These grasses will be planted in December, February, and May to

determine the best time for establishment. When the planting is completed, there will be about 100 plots.

A granule, called hydro-gel, will be added to the soil of some plots to test its ability to aid in seed germination and supply moisture to the plant for growth during dry periods. The gel is reported to be able to absorb 350-400 times its weight in water. This means that one pound of gel may be able to absorb as much as 400 pounds of water, or about 50 gallons that can be used for plant growth and development. After the seed has been planted, the test plots will be covered with rice straw to stop heavy rains from washing the soil down the slopes of the canal. In the spring, after planting is completed, several evaluations will be taken to determine which method of planting gives the best results in terms of establishing these native plants.

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## **WHY**

The soil structure of the Grand Prairie is made up of thick beds of clay that are topped with a thin layer of soil. The flat topography and thin soil make the area droughty, even with an annual rainfall of 52 inches. These two conditions contribute favorably to this prairie vegetation. Prior to the introduction of cultivated fields (rice, cotton, and soybeans) there was a vast native tallgrass prairie of about 700 square miles (sq. mi) in the Grand Prairie area. This area of grassland prairie was primarily used as pasture and hay for livestock production. Grasslands were either cleared for agriculture, or grew up into wetlands with the advent of fire prevention. Approximately 90 percent of this original prairie (700 sq. mi.) is contained within the irrigation project area. The predominate grasses of this area consisted of Indiangrass, switchgrass, big and little bluestem. Today the existing tall grass prairie consists of approximately 650 acres or 1/10 of one percent of the original area. There are 430 acres under private ownership and all of these could be lost tomorrow if the owner decides to plow them up and plant something else. Presently 220 acres are managed and cared for by the Arkansas Natural Heritage Commission. This relationship is the same as beginning with a football field (100 yards X 50 yards) and ending with an area 1.5 yards X 1.5 yards. If this area of tallgrass prairie were an animal or bird, it would

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